

REMARKS

This submission is in response to the Official Action mailed February 28, 2003. Reconsideration of the above identified application, in view of the above amendments and the following remarks, is respectfully requested.

I. Status of the Claims

Claims 1-18 are pending.

Claims 1, 5, 7, 10, 16, and 17 have been amended.

Claims 1-12, 16, and 17 stand rejected.

Claims 13, 14, 15, and 18 have been objected to.

No new matter has been added.

II. Status of the Specification

The Specification has been carefully reviewed and revised to correct typographical errors. No new matter has been added.

III. Telephone Interview

Applicant would like to thank Examiner Self for all of the courtesies extended in the telephone interview held on March 17, 2003, with Louis J. DelJuidice.

Applicant would like to thank the Examiner for discussing new claim language and further prosecution based on the Examiner's helpful suggestions.

IV. Acknowledgment of Allowable Subject Matter

Applicants would like to thank the Examiner for the acknowledgment of allowable subject matter in claims 13, 14, 15, and 18.

V. Supplemental Information Disclosure Statement

A Supplemental Information Disclosure Statement is also submitted concurrently with this response.

VI. 35 U.S.C. § 112 Rejection

Claims 1-18 stand rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Regarding claims 1 and 7, the Examiner states that it is unclear how the slide, the crankshaft, and the connecting rods are related to the press machine and to each other. Applicant respectfully submits that claims 1 and 7 and the claims which depend from claims 1 and 7 have been reviewed and amended to include proper interrelationships.

Regarding claim 7, the Examiner states that the term "the same location" is unclear. Applicant respectfully submits that claim 7 has been amended to remove the term "the same location".

Regarding claims 1-18, the Examiner states that it is unclear how the slide, driving means, upper link, connecting rods, and crankshaft are related to the press machine and to each other. Applicant respectfully submits that claims 1-18 have been reviewed and amended to include proper interrelationships.

Thus, Applicant respectfully requests that the above rejection be withdrawn.

VII. 35 U.S.C. § 103(a) Rejection over Imanishi

Claims 1-9 have been rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,848,568 to Imanishi and the Examiner's statement of ordinary skill in the art. This rejection is respectfully traversed, and reconsideration is requested since Imanishi does not disclose all of the elements of the claimed invention.

The Examiner states that Imanishi discloses a slide drive device featuring all of the novel aspects of the present invention as stated in claims 1-9 except for a second connecting rod and that it would have been obvious to one having ordinary skill in the art at the time of the invention to include a plurality of connection rods.

Applicant respectfully submits that the features of "first and second connecting rods" have been removed from claims 1 and 7. Claims 1 and 7 have also been amended to recite "a single adjusting means". Imanishi does not disclose a single adjusting means and furthermore requires a right and left adjusting means.

Claims 2-6, 8, and 9 depend from claims 1 and 7 and are therefore

patentable for at least the same reasons. Thus, Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection over Imanishi and requests the withdrawal thereof.

Furthermore, with respect to claim 5 which recites two connecting rods, Applicant submits that the Examiner has not made a case of *prima facie* obviousness since substituting a single connecting rod would destroy the intended purpose of the Imanishi invention. Imanishi's first slider 14 moves vertically along a lateral midpoint of the press. Thus, the movement of the left link is symmetrical to the movement of the right link, and the levelness of the slide can be maintained with a high degree of precision regardless of the lengths of the individual links. However, simply replacing Imanishi's crankshaft with a crankshaft having two eccentric sections and two connecting rods, as claimed in the present invention, does not result in the left link moving symmetrically with respect to the right link, and levelness of the slide is not achieved. When the slide is not level, the intended purpose of the Imanishi invention is destroyed.

Thus, substituting a single connecting rod into the Imanishi invention destroys its intended purpose. In contrast, the present invention requires two connecting rods and does not require a guide groove to maintain the levelness of the slide.

Claim 6 depends from claim 5 and is therefore patentable for at least the same reasons. Thus, Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection over Imanishi and requests the withdrawal thereof.

VIII. 35 U.S.C. § 103(a) Rejection over Imanishi in view of Yoshida

Claims 10-12 and 16-17 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Imanishi in view of U.S. Patent No. 6,148,720 to Yoshida. This rejection is respectfully traversed, and reconsideration is requested since Imanishi does not disclose all of the elements of the claimed invention.

The Examiner states that Imanishi discloses all of the novel features of the present invention as stated in claims 10 and 16 except for a slide driving device having a crankshaft with multiple eccentric portions. The Examiner states that Yoshida teaches the use of a crankshaft having multiple eccentric portions in a press machine and that it would have been obvious at the time of the invention to one having ordinary skill in the art to provide Imanishi with a crankshaft having multiple eccentric portions as taught by Yoshida. Applicant respectfully traverses this rejection, and reconsideration is respectfully requested.

Claim 10 depends from claim 7, which is patentable for at least the same reasons as provided above in response to the § 103(a) rejection over Imanishi of claims 1-9 since neither Imanishi nor Yoshida disclose "a single adjusting means". Furthermore, claim 10 recites a pair of connecting rods and is patentable for the reasons as provided above since neither Imanishi nor Yoshida disclose a pair of connecting rods. Substituting a pair of connecting rods into Imanishi would destroy the intended purpose of Imanishi. Claims 11 and 12 depend from claim 10 and are

therefore patentable for at least the same reasons.

Claim 16 has been amended to recite "a single adjusting means". Therefore, claim 16 is also patentable over Imanishi and Yoshida for at least the same reasons as provided above in response to the § 103(a) rejection over Imanishi of claims 1-9 since neither Imanishi nor Yoshida disclose "a single adjusting means". Furthermore, claim 16 recites a pair of connecting rods and is patentable for the reasons as provided above. Substituting a pair of connecting rods into Imanishi would destroy the intended purpose of Imanishi. Claim 17 depends from claim 16 and is therefore patentable for at least the same reasons.

Thus, Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection over Imanishi in view of Yoshida and requests the withdrawal thereof.

CONCLUSION

Therefore, in view of the above amendments and remarks, it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Respectfully submitted,



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PATENT TRADEMARK OFFICE

Docket No: 9637/OL310

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Shozo IMANISHI

Serial No.: 09/910,457

Art Unit: 3725

Confirmation No.: 1740

Filed: July 20, 2001

Examiner: Shelley M. SELF

For: DRIVING DEVICE FOR A PRESS

MARKED-UP VERSION FOR AMENDMENT

IN THE SPECIFICATION:

Please replace the paragraph at page 16, line 24, to page 17, line 3, with the following paragraph:

In other words, with the slide drive mechanism shown in the preferred embodiment, the dynamic balance mechanism and die height adjustment mechanism may be omitted or replaced with other embodiments. For example, by making slider pin 21 and second pin 23 the same, first linear guide 19 and horizontal link 24 become

unnecessary. This adaptation is [undesirably] undesirable since the die height adjusting mechanism must then be mounted on the slider side.

Please replace the paragraph at page 17, lines 12-17, with the following paragraph:

It is to be understood, that small end part 17 of connecting rod 12, has an approximately linear motion along a horizontal line from crank shaft 4. As a result, the horizontal guide mechanisms of the prior art may be omitted as unnecessary. It is to be further understood, that due to the 180 degree symmetry of the present invention, a left-right balance of press 1 is maintained during operation thereby limiting vibration, equipment [ware] wear and failure.

IN THE CLAIMS:

Please amend claims 1, 5, 7, 10, 16, and 17 as follows:

1. (Twice Amended) A slide drive device for a press machine, comprising:

a slide;

said slide including a top and a bottom dead center position;

[an] a single adjusting means for permitting adjustment of a stroke of said slide;

and

said adjusting means simultaneously adjusting said top and bottom dead center

positions by a same amount [;

said adjusting means being located at a single point on said press machine;

a crankshaft ; and

first and second connecting rods on said crankshaft].

5. (Twice Amended) A slide drive device, according to claim 4, further comprising:

a crankshaft;

first and second connecting rods on said crankshaft;

said connecting rod receiving a reciprocating motion and transmitting said reciprocating motion to said means for driving;

said connecting rod and said means for driving being effective to transmit said reciprocating motion to said dynamically balancing means; and

said guiding means being effective to convert said reciprocating motion to a guiding displacement, whereby said slide operates in said cycle.

7. (Twice Amended) A slide drive device for a press machine having a slide, comprising:

a slide;

said slide having a top and a bottom dead center position;

[an] a single adjusting means for adjusting a stroke of said slide;

said adjusting means simultaneously adjusting said top and bottom dead center positions by a same amount;

[said adjusting means being located at the same location on said press machine;]

a driving means for permitting driving of said slide drive device;

at least a first upper link;

said first upper link being connected to drive said slide in a cycle;

said driving means transmitting a driving displacement to said slide to drive said slide in said cycle; and

said driving means transmitting said adjustment to said slide whereby said stroke is adjusted [;

a crankshaft; and

first and second connecting rods on said crankshaft].

10. (Twice Amended) A slide drive device, according to claim 9, further comprising:

a crankshaft;

first and second connecting rods on said crankshaft;

a center of said crankshaft vertically aligned with said second slider;

at least one of a first and second eccentric part on said crankshaft;

said first and second eccentric parts diametrically opposed on said crankshaft;

said first and second eccentric parts balanced about a rotation center of said

crankshaft;

said at least one connecting rod on said one eccentric part;

said connecting rod receiving a reciprocating motion and transmitting said reciprocating motion to said driving means;

said driving means being effective to transmit said reciprocating motion to said dynamically balancing means; and

a guiding means being effective to convert said reciprocating motion to a guiding displacement, whereby said slide operates in said cycle.

16. (Twice Amended) A slide drive device, for a press machine having a slide, comprising:

a single means for adjusting said slide drive device;

a crankshaft;

a first eccentric part on said crankshaft;

a second eccentric part on said crankshaft;

said first and second eccentric parts operably opposing each other about a rotation center of said crankshaft;

a first and second connecting rod;

said connecting rods operably joined to said eccentric parts;

said connecting rods receiving a driving displacement from said crankshaft;

a first and second upper link;

said upper links operable about a fixed fulcrum pin;
a first and second middle link;
said middle links having first and second ends;
said connecting rods effective to transfer said driving displacement to said middle links at said second ends;
said upper links operably joined to said middle link at a center fulcrum point between said first and second ends;
said middle links effective to transfer said driving displacement to said upper links;
said middle links and said upper links operably effective to transfer said driving displacement to a slide and drive said slide in a cycle;
said connecting rods having a length (a);
said center fulcrum point located a length (c) from said second end;
said center fulcrum point located a length (b) from said first end; and
said lengths (a), (b), (c), having the following relationship:
$$(a):(b) = (b):(c) \quad (VII)$$

whereby said connecting rods operate horizontally to said crankshaft and said upper links and said middle links are effective to transfer said driving displacement to said slide and drive said slide in said cycle at a low speed adjacent said bottom dead center for increased force and a fast speed distal said bottom dead center for a speedier return.

17. (Amended) A slide drive device, according to claim 16, further comprising:

[means for adjusting said slide drive device;]

a top and a bottom dead center position of said slide;

said adjusting means permitting adjustment of a stroke of said slide;

said adjusting means permitting adjustment of said top and bottom dead center position at the same time;

said adjusting means permitting said adjustment of said top and bottom dead center positions by the same amount;

at least one of a first and second horizontal link;

a first and second end on said one horizontal link;

said one horizontal link effective to receive said driving displacement at said second end;

said one horizontal link effective to receive said adjustment at said first end; and

said one horizontal link effective to transfer said driving displacement and said adjustment to said slide whereby said slide is adjusted and driven in said cycle.

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PATENT TRADEMARK OFFICE

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In re Application of: Shozo IMANISHI

Serial No.: 09/910,457

Art Unit: 3725

Confirmation No.: 1740

Filed: July 20, 2001

Examiner: Shelley M. SELF

For: DRIVING DEVICE FOR A PRESS

PENDING CLAIMS

1. (Twice Amended) A slide drive device for a press machine, comprising:
a slide;
said slide including a top and a bottom dead center position;
a single adjusting means for permitting adjustment of a stroke of said slide; and
said adjusting means simultaneously adjusting said top and bottom dead center positions by a same amount.

2. (Amended) A slide drive device, according to claim 1, further comprising:
a driving means for driving of said slide drive device;
at least a first upper link;
said first upper link being connected to drive said slide in a cycle;
said driving means transmitting a driving displacement to said first upper link to
drive said slide in said cycle; and
said means for driving transmitting said adjustment to said slide whereby said
stroke is adjusted.

3. A slide drive device, according to claim 2, further comprising:
dynamically balancing means for permitting dynamic balancing of said slide drive
device;
a dynamic balancer operably connected to said slide;
said dynamically balancing means connected to said dynamic balancer;
said dynamically balancing means being operably connected to move said
dynamic balancer opposite said slide in said cycle;
said means for driving connected to transmit said driving displacement to said
dynamically balancing means; and
said dynamically balancing means moving said dynamic balancer opposite said
slide in said cycle whereby said dynamic balancer operates to dampen vibration from
said slide.

4. A slide drive device, according to claim 3, further comprising:
guiding means for guiding of said slide drive device;
at least a first horizontal link;
said first horizontal link operably connecting to said slide;
said guiding means guiding said first horizontal link in said cycle;
said driving means including said guiding means; and
said guiding means guiding said adjustment and said driving displacement to said slide whereby said stroke is adjusted.

5. (Twice Amended) A slide drive device, according to claim 4, further comprising:

a crankshaft;
first and second connecting rods on said crankshaft;
said connecting rod receiving a reciprocating motion and transmitting said reciprocating motion to said means for driving;
said connecting rod and said means for driving being effective to transmit said reciprocating motion to said dynamically balancing means; and
said guiding means being effective to convert said reciprocating motion to a guiding displacement, whereby said slide operates in said cycle.

6. (Amended) A slide drive device, according to claim 5, further comprising:

- said at least first upper link having a first length (a);
- at least a first middle link;
- a center fulcrum pin on said first middle link;
- said first upper link operably connecting to said first middle link at said center fulcrum pin;
- a first and second end on said first middle link;
- said first connecting rod operably coupled to said second end;
- said first middle link comprising a second length (b) measured between said first end and said center fulcrum pin, and a third length (c) measured between said second end and said center fulcrum pin; and
- said first, second, and third lengths having the following relationship:
$$(a):(b) = (b):(c) \quad (V)$$

whereby said first connecting rod transmits said driving displacement to said first upper link and said first middle link and driving means reduces a slide speed adjacent said bottom dead center position and increases said slide speed distal said bottom dead center position.

7. (Twice Amended) A slide drive device for a press machine having a slide, comprising:

- a slide;

said slide having a top and a bottom dead center position;
a single adjusting means for adjusting a stroke of said slide;
said adjusting means simultaneously adjusting said top and bottom dead center positions by a same amount;
a driving means for permitting driving of said slide drive device;
at least a first upper link;
said first upper link being connected to drive said slide in a cycle;
said driving means transmitting a driving displacement to said slide to drive said slide in said cycle; and
said driving means transmitting said adjustment to said slide whereby said stroke is adjusted.

8. (Amended) A slide drive device, according to claim 7, further comprising:
a guiding means for guiding of said slide drive device;
at least a first horizontal link;
first and second linear guides;
first and second sliders;
said second slider operably slidable in said second linear guide;
said one horizontal link operably joined to said second slider;
said second slider receiving said driving displacement from said driving means;
said guiding means being effective to guide said adjustment to said slide; and

said first horizontal link driving said slide in said cycle whereby said stroke is adjusted and said top and bottom dead center positions are adjusted by the same amount.

9. A slide drive device, according to claim 8, further comprising:

dynamically balancing means permitting dynamic balancing of said slide drive device;

said dynamically balancing means connecting a dynamic balancer to said slide;

said dynamically balancing means connects to operate said dynamic balancer opposite said slide;

said dynamically balancing means receiving said guiding displacement; and

said dynamically balancing means being effective to operate said dynamic balancer opposite said slide whereby said dynamically balancing means and said dynamic balancer counter a momentive force of said slide in said cycle and substantially lower vibration in said slide drive device.

10. (Twice Amended) A slide drive device, according to claim 9, further comprising:

a crankshaft;

first and second connecting rods on said crankshaft;

a center of said crankshaft vertically aligned with said second slider;

at least one of a first and second eccentric part on said crankshaft;
said first and second eccentric parts diametrically opposed on said crankshaft;
said first and second eccentric parts balanced about a rotation center of said crankshaft;
said at least one connecting rod on said one eccentric part;
said connecting rod receiving a reciprocating motion and transmitting said reciprocating motion to said driving means;
said driving means being effective to transmit said reciprocating motion to said dynamically balancing means; and
a guiding means being effective to convert said reciprocating motion to a guiding displacement, whereby said slide operates in said cycle.

11. A slide drive device, according to claim 10, further comprising:
a small and a large end on said one connecting rod;
said large end operably attached to said one eccentric part;
said small end operably attached to said driving means; and
said small end reciprocating linearly to a rotation center of said crank shaft
whereby said driving displacement is transmitted to said slide.

12. (Amended) A slide drive device, according to claim 11, further comprising:
at least a first upper link;

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said first upper link operable about a fixed fulcrum pin;
said at least one upper link having a first length (a);
at least a first middle link;
a center fulcrum pin on said first middle link;
said first upper link pivotably joined to said one middle link at said center fulcrum pin;
a first and second end on said one middle link;
said one connecting rod operably coupled to said second end;
said one middle link comprising a second length (b) measured between said first end and said center fulcrum pin, and a third length (c) measured between said second end and said center fulcrum pin; and
said first, second, and third lengths having the following relationship:
$$(a):(b) = (b):(c) \qquad (VI)$$
whereby said one connecting rod transmits said driving displacement to said first upper link and said first middle link and said driving means drives said slide in said cycle and reduces a slide speed adjacent said bottom dead center position and increases said slide speed distal said bottom dead center position.

13. A slide drive device, according to claim 12, further comprising:

a guide pin;

said guide pin guiding said dynamic balancer opposite said slide;

a balancer pin;
said balancer pin operably joined to said dynamic balancer;
a balancer link;
said balancer link operably joining said balancer pin to said one connecting rod;
said balancer link receiving said driving displacement and transmitting said
guiding displacement to said dynamic balancer whereby said dynamic balancer
operates opposite said slide and substantially eliminates vibration; and
said dynamic balancing means having a shape adapted to said driving means
whereby said slide drive device is compact in size.

14. A slide drive device, according to claim 13, wherein:

said balancer pin is vertically aligned with said fixed fulcrum pin

15. A slide drive device, according to claim 14, further comprising:

a first linear guide;

said first linear guide vertically aligned with said fixed fulcrum pin and said
balancer pin;

a first slider operably slidable in said first linear guide;

said first end of said one middle link operably joined to said first slider;

said one middle link operably transmitting said driving displacement from said
one connecting link to said first slider;

at least one of a first and second lower link;
a first and second side on said one horizontal link;
said first side operably joined to said second slider;
said second side operably joined to said one lower link;
said one lower link operably joining said first slider and said one horizontal link;
and
said first slider being effective to convert said driving displacement to a linear displacement whereby said one lower link operably drives said one horizontal link and said slide in said cycle.

16. (Twice Amended) A slide drive device, for a press machine having a slide, comprising:

a single means for adjusting said slide drive device;
a crankshaft;
a first eccentric part on said crankshaft;
a second eccentric part on said crankshaft;
said first and second eccentric parts operably opposing each other about a rotation center of said crankshaft;
a first and second connecting rod;
said connecting rods operably joined to said eccentric parts;
said connecting rods receiving a driving displacement from said crankshaft;

a first and second upper link;
said upper links operable about a fixed fulcrum pin;
a first and second middle link;
said middle links having first and second ends;
said connecting rods effective to transfer said driving displacement to said middle links at said second ends;
said upper links operably joined to said middle link at a center fulcrum point between said first and second ends;
said middle links effective to transfer said driving displacement to said upper links;
said middle links and said upper links operably effective to transfer said driving displacement to a slide and drive said slide in a cycle;
said connecting rods having a length (a);
said center fulcrum point located a length (c) from said second end;
said center fulcrum point located a length (b) from said first end; and
said lengths (a), (b), (c), having the following relationship:

$$(a):(b) = (b):(c) \quad (VII)$$

whereby said connecting rods operate horizontally to said crankshaft and said upper links and said middle links are effective to transfer said driving displacement to said slide and drive said slide in said cycle at a low speed adjacent said bottom dead center for increased force and a fast speed distal said bottom dead center for a

speedier return.

17. (Amended) A slide drive device, according to claim 16, further comprising:

- a top and a bottom dead center position of said slide;
- said adjusting means permitting adjustment of a stroke of said slide;
- said adjusting means permitting adjustment of said top and bottom dead center position at the same time;
- said adjusting means permitting said adjustment of said top and bottom dead center positions by the same amount;
- at least one of a first and second horizontal link;
- a first and second end on said one horizontal link;
- said one horizontal link effective to receive said driving displacement at said second end;
- said one horizontal link effective to receive said adjustment at said first end; and
- said one horizontal link effective to transfer said driving displacement and said adjustment to said slide whereby said slide is adjusted and driven in said cycle.

18. A slide drive device, according to claim 17, further comprising:

- means for dynamically balancing said slide drive device;
- said dynamic balancing means operably moving a dynamic balancer opposite said slide in said cycle;

a guide pin operably guiding said dynamic balancer during said cycle;
said guide pin vertically aligned with said fixed fulcrum pin;
said dynamic balancing means driven by said one connecting rod; and
said dynamic balancing means being effective to counter a momentive force of
said slide and said one connecting rod whereby said slide operates in said cycle with
substantially lower vibration.